examinations is a necessary preliminary to any substantial improvement in teaching."

The syndicate has, therefore, made recommendations affecting the subject-matter of the Previous Examination. The alterations will begin to operate in the Lent term of 1904, and will finally supersede the present regulations after October, 1905. The principal changes may be summarised as follows :—

(1) In demonstrative geometry, Euclid's Elements shall be optional as a text-book, and the sequence of Euclid shall not be enforced. The examiners will accept any proof of a proposition which they are satisfied forms part of a systematic treatment of the subject.

(2) Practical geometry is to be introduced, along with deductive geometry, and questions will be set requiring careful draughtsmanship and the use of efficient drawing instruments.

(3) In arithmetic, the use of algebraical symbols and processes will be permitted.

(4) In algebra, graphs and squared paper work will be introduced; and a knowledge will be required of fractional indices and the use of four figure tables of logarithms.

The scope of the subject-matter in geometry is set out in two schedules. The first gives a list of constructions in practical geometry. We venture to take exception to one detail in this list, that of requiring a construction for drawing a common tangent to two circles. Why insist on first finding the points of contact? This may have been necessary under Euclid's postulates, but it should now be discarded; it is not practical geometry.

The second schedule indicates the amount of book work necessary in preparing for the Previous Examination. The propositions enumerated are nearly all contained in the Elements, but a judicious amount of pruning has been effected in the latter. Hypothetical constructions are permitted. The theory of incommensurables is not required.

The increase of freedom now being given to teachers should lead to further developments in the reform as experience is gained. It will be one great advantage to have the several branches of the subject brought into closer association and reacting on one another.

Geometry will be made generally interesting and will at last have a chance of being taught in a manner suited to boys. In looking out for suitable numerical examples in geometry, we predict that a good teacher will not fail to make use of functions of angles. Probably three figure tables of chords, sines, cosines and tangents will be sufficient, reading to tenths of a degree, and occupying a very modest space. A boy's interest will be stimulated when he discovers the latent power residing in these innocent looking tables. And in checking his graphical results, he may be led on to the numerical solution of right-angled triangles before he has heard of trigonometry, and will never afterwards be repelled by the symbols sin., cos., tan.

The employment of logarithms is most important. Their use illustrates the significance of fractional indices. And here again the interest of a boy must surely be aroused when he finds himself in possession of a new, unforeseen, and most valuable means of calculation.

The introduction of graphs is of great value. The fundamental idea of the representation of position and change of position by means of rectangular coordinates is thus acquired early and in an agreeable manner. Some teachers find that it is quite possible to go on without much delay to easy illustrations of the calculus.

Looking ahead to possible developments, the graphical use of polar coordinates to mark position and change of position, by the plotting of lengths and angles, might serve as an introduction to the study of vectors, a subject of first importance, and at present so woefully neglected.

We regard this reform at Cambridge as an important step in the movement now in progress throughout the country, and we hope to see it carried much farther before crystallisation takes place.

THE UNIVERSITY OF LONDON.

THE presentation for degrees of the University of London, which is to take place in the Albert Hall as we go to press, under the presidency of the Chancellor, Lord Rosebery, is noteworthy in several respects. For the first time in the history of the university, honorary degrees are to be conferred, the recipients being their Royal Highnesses the Prince and Princess of Wales, Lord Kelvin, and Lord Lister. The Prince is to receive the honorary degree of Doctor of Laws, the Princess that of Doctor of Music, and Lord Kelvin and Lord Lister that of Doctor of Science. Ordinary degrees are also to be conferred on 414 persons who have obtained them during the past year. Moreover, the occasion is remarkable as being the first gathering of representatives of all the different institutions and groups of persons connected with the university.

The reconstituted university has opened up new avenues of work in connection with schools, with university extension, with the colleges, medical schools, and polytechnics; students are entering both for the ordinary matriculation examination and for post-graduate study and research in unexpected numbers. The educational forces of London have, in fact, been organised by the university, and public interest is being shown in the work. But, as Sir Arthur Rücker, the principal, has pointed out, while there are many grounds for hope, and while the university is doing its best to make itself worthy of public support, it can never fulfil its duties without the supply of funds from public or private sources on a very large scale. We trust that one result of the brilliant ceremony on Wednesday evening will be an increase of the endowment of the university sufficient to secure the full development of the scheme which has already produced such satisfactory results.

NOTES.

FOR the first time for about forty years the Royal Society of Edinburgh, on the evening of June 6, held a conversazione. Lord and Lady Kelvin and Sir William Turner received the guests. There were many interesting exhibits from several departments of the Universities of Edinburgh, Glasgow, and St. Andrews, from the Geological Survey of Scotland, the Scottish Antarctic Expedition, &c. Prof. McIntosh, of St. Andrews, sent over a large collection of pearl shells and animals, living and dead, and great interest was taken in Prof. Ewart's exhibition of hybrid ponies. Some of the lantern exhibits were particularly attractive, notably the projection on the screen of tanks of living worms, crustacea, &c., and a fine selection of slides made from Piazzi Smyth's "cloud" negatives. Among the inventions and novelties exhibited, Dr. Halm's instruments for mechanically correcting stellar observations and for solving Kepler's problem in any given case, and Dr. Hugh Marshall's petrol incandescence lamp are worthy of mention.

CAPTAIN AMMUNDSEN'S Magnetic North Pole Expedition left Christiania on June 16 on board the ship *Gjoa*.

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WE regret to announce the death, on June 10, of Prof. Luigi Cremona, director of the engineering school of the University of Rome.

THE summer meeting of the Institution of Naval Architects was opened at Belfast on Tuesday, and Lord Glasgow delivered his presidential address.

THE retirement of Sir James Hector, K.C.M.G., from the directorship of the Geological Survey of New Zealand and of the Colonial Observatory is announced by the *Victorian Naturalist*.

MR. MARCONI'S manager at Glace Bay, Nova Scotia, states that the company is transmitting daily wireless messages from Table Head to Poldhu, but the replies are being cabled pending the installation of machinery at Cornwall.

THE *Times* announces that Commander Don Julian Irizar, Naval Attaché to the Argentine Legation in London, has been appointed to command the vessel *Uruguay*, which will be sent by the Argentine Government in October to the Antarctic regions in search of Dr. Otto Nordenskjöld's South Polar expedition, which was joined at Buenos Ayres in 1901 by an officer of the Argentine Navy.

A GRANT of 5000 dollars, and travelling expenses to the amount of 1500 dollars, has been made to Prof. Arthur Gamgee by the Carnegie Institution for the preparation of a report on the physiology of nutrition, the object being to enable him to secure information which may lead to the organisation in the laboratories of various countries of cooperative research in the important problem of human nutrition, &c.

PROF. STEINMANN, of Freiburg, and two of his fellow-geologists of the same University, have arranged an expedition to the Central Andes of Bolivia. The party will start in August for Buenos Ayres, whence the route to be taken is *viâ* Jujuy, Tarija, Sucre, to Cochabamba. After a prolonged stay in the mountains the explorers will probably work their way to Antofagasta *viâ* La Paz. The outfit is of the most modern description, and Dr. Hoek, who is a member of the expedition, is one of the most capable German mountaineers.

THE International Fire Prevention Congress convened by the British Fire Prevention Committee will be opened at Earl's Court on Monday, July 6, by the Lord Mayor of London, who will be accompanied by the Burgomaster of Brussels. The general and sectional discussions will be held on the forenoons of July 7, 8, and 9. The testing operations and inspections are fixed for the afternoons of these days.

THE Royal Statistical Society announces the next competition for the Howard medal (1903–1904). The essays must be sent in on or before June 30, 1904. In addition to the medal, a grant of 20*l*. will be awarded to the writer who may be the successful competitor. The subject is "The Effect, as Shown by Statistics, of British Statutory Regulations, Directed to the Improvement of the Hygienic Conditions of Industrial Occupations." Full particulars may be obtained at the office of the Society, 9 Adelphi Terrace, Strand.

THE concluding meeting of the thirty-eighth session of the Aëronautical Society of Great Britain will be held on the Sussex Downs this afternoon. On this occasion will take place the international kite competition (wind and weather permitting) for the silver medal of the Society, in accordance with the rules and regulations drawn up by the council of the Society and the jury of the competition. Amongst those who have consented to act on the jury are Dr. W. N. Shaw, F.R.S., Prof. C. V. Boys, F.R.S., Mr. E. P. Frost, Sir Hiram Maxim, Dr. H. R. Mill, Mr. E. A. Reeves, and Mr. Eric Stuart Bruce.

WE learn from the *Lancet* that Dr. Loudon, of St. Petersburg, has published some interesting observations relative to the action of the Becquerel rays on the nervous system and on the eye. He found that when a box containing bromide of radium was placed in a cage in which mice were kept the animals became paralysed and comatose, and died in five days. He also found that persons who are either totally blind, or have only the feeblest possible perception of light, are peculiarly sensitive to the Becquerel rays, and are able to form visual conceptions of the contour of objects the shadows of which are shown on a screen by means of the rays.

THE following note referring to observations of sunrise at Stonehenge on Sunday appeared in Monday's *Times*:—For the first time for nearly ten years visitors to Stonehenge yesterday morning saw the sun rise over the altar-stone. There was an almost cloudless sky, and at forty-three minutes past three the sun appeared above the horizon and rose in a direct line over the altar-stone. It was a magnificent sight, and after a moment's silence the crowd gave a mighty cheer. There were some hundreds of people present, many of them having travelled in previous years many miles during the night preceding the longest day in the hope of seeing the sight which was seen under such favourable conditions yesterday morning.

SLIGHT earthquake shocks were felt in North Wales and Anglesey on the morning of June 19. Mr. Fred. C. Carey, of the County School, Bethesda, writes to us that the first shock was felt by him in the county school at 10.8 a.m. precisely, when a distant rumbling noise, lasting about a minute, was heard, and the whole building shook. Slighter tremors followed at 10.12·5, 10.16, 10.19·5, 10.27, and 11.11·5. At Carnarvon the buildings trembled violently. At Bangor the shocks were felt at about the same time. The bells rang at the railway station. The post office at Llanrug was much shaken. The shocks were general throughout Carnarvonshire, and were felt as far as the southern part of the Isle of Man. The vibration appeared to travel in a north-westerly direction. In Anglesey the shock was comparatively slight.

IN connection with the meeting of the International Meteorological Committee at Southport during the British Association week in September next, it is proposed to make arrangements for an exhibition of meteorological appliances and other objects of meteorological interest. Upon the initiative of the Meteorological Council, with the co-operation of the Royal Meteorological Society and the Scottish Meteorological Society, a committee has been formed to carry out this proposal. It is proposed to group the exhibits into four classes:—(*A*) meteorological statistics; (*B*) weather telegraphy; (*C*) atmospheric physics, including (*a*) meteorological photography; (*b*) instruments and instrumental records; (*c*) high level stations, balloons and kites, observations and records; (*d*) experimental illustrations; (*D*) the relation of meteorology to other branches of physics.

THE weekly weather report issued by the Meteorological Office for the week ended June 20 shows that over the southern part of England the rainfall was three times as much as the mean, while in the east of England it was more than seven times as great. Further, that the rain-

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fall since the beginning of the year is in excess of the average in all districts, varying from more than 10 inches in the north of Scotland to 0·9 inch in the north-east of England. During the first three weeks of this month the amount measured near London was upwards of 6 inches; the Greenwich records for the last 60 years show that the heaviest previous fall in June was 5·80 inches, in the year 1860. At Malin Head the fall in the same three weeks was only 0·05 inch, and at Holyhead only 0·4 inch. But on June 22 an area of low barometric pressure reached our western coasts and occasioned heavy rain, amounting to an inch and three quarters at Valencia in the forty-eight hours ending 8h. a.m. on June 24.

THE cleanliness of electric lighting has always been urged as one of the great claims in its favour, and it has been justly pointed out that the saving effected in redecoration partly balances its extra cost. Although this is true, electric light cannot be regarded as perfectly clean; it has long been noticed that there is a marked tendency for dust to accumulate on electric light fittings and wires, and on the walls and ceilings in their immediate neighbourhood. This is partly, no doubt, due to the air currents produced by the local heating, but it is also partly an electrical phenomenon. The dust particles floating in the air are presumably at air potential, and are consequently attracted to the conductors on the non-earthed side of an earthed system; they either stick to these permanently, or remain on them until charged, when they are projected on to and stick to the walls. The defect has naturally become more marked with the increased use of 200-volt systems. If switches are always put, as they should be, in the non-earthed wire, the deposition of dust will only occur during the time the lamps are alight, and will be minimised. Mr. D. S. Munro, writing in the *Electrical Review*, points out that a still further improvement can be effected by using concentric flexible conductors instead of the ordinary twisted cord, the outer conductor being connected to the earthed side of the system.

DR. EDINGTON read a paper at the recent meeting of the South African Science Association upon the occurrence of an epidemic among domesticated animals in Mauritius, in which trypanosomata were found in the blood. It attacked cattle, mules, horses, and donkeys, among which it caused an alarming mortality, and seemed to be allied either to nagana or to surra.

THE commemoration day proceedings of the Livingstone College were held at Leyton on June 10. The College trains missionaries in the elements of medicine and surgery. The Bishop of St. Albans, who presided, stated that there could be little doubt that the average life of a man abroad was considerably extended when due care was taken to observe the rules of health. He referred to the importance of training women as medical missionaries for work in India, and to the moral effect exerted upon native races by curing their bodily ailments.

THE annual return showing the number of experiments performed on living animals in the United Kingdom during 1902 has been issued as a Parliamentary paper (186). In England and Scotland the number of licensees was 319, of whom 112 performed no experiments. The total number of experiments performed by these was 14,906, of which 2130 were carried out under anæsthetics, and the remainder, 12,776, were of the nature of hypodermic inoculations. The inspector, in his report, directs attention to the large number of experiments performed for the preparation of remedies and on behalf of various public authorities. Five licensees alone performed 3857 inoculation experiments for testing anti-toxins, and fifteen licensees 3997 inoculations for public bodies for the purpose of testing milk for tuberculosis, for the examination of sewage and of air, and the like. As regards Ireland, 13 licences were in existence during the year, and 65 experiments were performed under them.

WE have received from the director of the Survey Department, Cairo, a report on the meteorological observations made at the Abbassia Observatory during the year 1900, together with mean values for Alexandria for the previous ten years also monthly results for Port Said, Assiut and Omdurman for part of the year 1900. The report is a very valuable contribution to Egyptian climatology, and bears evidence of every care having been taken in the selection of trustworthy instruments and in the reduction of the observations. The observatory is now well supplied with automatically registering instruments of the best patterns, including Dines's anemometer, Callendar's electric recorders for dry- and wet-bulb platinum wire thermometers, Campbell-Stokes's sunshine recorder, and Milne's seismometer. For Abbassia hourly observations are given, and the results, with daily and annual variations and other data, are shown in clearly drawn diagrams, both for this station and for Alexandria. From the latter ten-year series we note that the mean of the highest temperatures recorded in each month was 36°·6 C. in May, and of the lowest maxima 21°·6 in January; the mean of the highest minima was 22°·7 in August, and of the lowest 7°·0 in January. The extreme values were 40° and 5°·4. The mean annual rainfall is only 9·53 inches; most of this falls between November and January. No measurable quantity falls in June, July and August, and only three-tenths of an inch, on the average, in September.

IN our recent notice of Messrs. Burroughs Wellcome and Co.'s "tabloid" preparations for photographers, we remarked that, among a very large assortment of reagents and mixtures, mercuric chloride and ferrous oxalate appeared to have been overlooked. The firm informs us that the mercuric iodide and sodium sulphite intensifier is so efficient that it does not consider the issue of mercuric chloride tabloids as desirable. We would point out that intensification is the only process subjected to such a limitation, and that, although the iodide of mercury method is easily applied and the tabloids are excellent for the purpose, there is no method of intensification that is so simple in its chemical and physical effects, and so trustworthy as to the amount of change produced and the permanency of the resulting negative, as the use of mercuric chloride followed by ferrous oxalate. The same advantages that we have indicated in connection with photographic "tabloids" apply also to the same firm's "'soloid' microscopic stains." A dozen or more varieties are already issued, the most recent addition being Leishman's modification of Romanowsky's stain for blood films. Microscopists will appreciate not only the convenience of being able to prepare staining solutions without having to weigh the solid substances, but also the fact that these preparations are made from materials specially selected for the purpose.

IN *Science* for May 29, Mr. C. A. Chant discusses certain questions connected with theories of colour vision, and in particular a view put forward by Dr. Kirschmann according to which colour sensation may not be due to the effect of rays of one particular wave-length, but rather to the superposition of rays of different lengths the *combination* of which produces the effect of colour. That the theory in question is a possible one arises from the fact that "nobody

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has seen light of one wave-length," and even in the narrowest band obtainable by a pure spectrum, differences of frequency amounting to many millions of wave-lengths may occur. Mr. Chant, on the other hand, refers to the experiments of Rowland, Michelson and Morley, Perot and Fabry in obtaining interference effects with very long differences of path (other experiments in this direction were recently noted in NATURE), and to the fact that not only was there no sign of the colour disappearing when the light approached perfect homogeneity, but the intensity of the sensation was slightly increased.

THE article on the infection-power of ascospores in the Erysipheæ is continued in the *Journal of Botany* (June) by Mr. E. S. Salmon. The ascospores of *Erysiphe graminis* growing on barley were found to be capable of infecting two allied species, but failed when sown on four other species of Hordeum, as well as on wheat, oats and rye. This establishes the existence of biologic forms in the ascospore stage similar to those known for the conidial stage. In the case of the form under investigation, the same species of Hordeum are proof against infection whether by ascospores or conidia.

THE announcement was recently made of the discovery of a new source of indiarubber, the peculiarity being that the latex, which has been found to yield a good marketable caoutchouc, is obtained from the underground portion of the tree, a Landolphia. The genus is confined to Africa, more especially to the tropical regions, and is characterised by the presence of latex in the stem, but the latex only furnishes caoutchouc in a few species. Of these the three best known, *Landolphia Kirkii*, *L. owariensis*, and *L. florida*, are lianes climbing by means of tendrils. Recently the new species *Landolphia Thalloni* has been exploited in the French Congo; the aërial portions of this species persist only for one or two seasons, and the latex is stored in the rhizome.

THE whole of vol. lxxiv. part ii. of the *Zeitschrift für wissenschaftliche Zoologie* is occupied by the first instalment of a dissertation, by Prof. A. Schuberg, on the nature of intercellular tissue. Among other results, it is demonstrated that the tissue between the cells of the epidermis is readily distinguishable from the corresponding structure in the true skin.

IN the April number of the *American Naturalist*, Prof. W. Patten describes certain fragmentary remains which, in his opinion, justify the conclusion that the primitive fish-like creature Trematapis (previously known only by the dorsal shield) was furnished with a pair of oar-like swimming appendages attached to the head, and resembling those of Pterichthys and Bothriolepis. If this be so, it is probable that similar appendages likewise existed in Pteraspis, Cyathaspis, and Polyaspis.

IN an article entitled "The Ways of Nature," published in the June number of the *Century Magazine*, Mr. J. Burroughs discourses in a popular style on the question whether the lower animals really possess self-consciousness. Probably, he argues, they think without knowing that they think, and thus the faculty in question is restricted to man. Later on reference is made to incidents quoted in well-known works which seem to show that animals are really possessed of reasoning powers, but it is pointed out that since these incidents were, in most cases, at any rate, not recorded by trained scientific observers, their value must be largely discounted.

IN the report of the Marlborough College Natural History Society for 1902, the secretary states that, notwithstanding the season having been unfavourable for field-work, there are no reasons to be dissatisfied with the results of the year. The collections which have been most largely increased are those of the various groups of insects, especially Diptera. The members, it is stated, have been urged to specialise their studies, as it is considered that by this method the best results are ensured for future years. Whether this is really so there may, however, be two opinions.

ACCORDING to the annual report of the Cambridge Museums and Lecture Rooms Syndicate for the past year, considerable progress has been made in transferring the collections of the Woodwardian Museum to the Sedgwick Memorial Museum in Downing Street, where the geological lectures have been delivered. Amongst the more important additions to the University collections, special attention is directed to a valuable series of human skulls obtained from various sources, also to the skeleton of a humpback whale, presented by Mr. Rothschild, and to specimens of the whale-headed stork (*Balaeniceps rex*), the gift of Sir Reginald Wingate. During the twelvemonth the Zoological Museum has likewise been enriched by the gift, from Prof. Newton, of several collections of birds and eggs of exceptional value.

M. É. RECLUS has reprinted his interesting little book "Les Primitifs," which was originally published in 1885. The book is well known to English readers under the title "Primitive Folk: Studies in Comparative Ethnology" (The Contemporary Science Series); it deals with the Eskimo, Apaches, and various tribes of southern India. Nothing new has been added to the original edition.

DR. FRANZ BOAS has published as *Bulletin* 27 of the publications of the Bureau of American Ethnology the Tsimshian texts he collected at the mouth of the Nass River in 1894 while he was engaged in researches under the auspices of the British Association Committee on the North-western Tribes of Canada. By far the greater number of these are myths of the tribes in which the miraculous is blended with the actual; it is not difficult to eliminate the former. The remainder gives a good insight into the everyday life of the people. The texts are printed as they were taken down by Dr. Boas from his informants, and a literal word for word translation is given, as well as a more free rendering. In addition to their linguistic value these texts afford the reader a good idea of the literary style and the sentence-building of the Tsimshian Indians without a previous knowledge of the language being necessary.

A REPORT on the Kangaroo Hills Mineral Field, by Mr. W. E. Cameron, has been issued by the Queensland Geological Survey. The district is one of altered sedimentary rocks and granite, in which tin, copper, and silver mining has been carried out. A report on Yorkey's Gold Field and the Marodian Gold and Copper Field in the district of Wide Bay, Queensland, has been prepared by Mr. L. C. Ball. Yorkey's Gold Field lies in an area of slates assigned with doubt to the Gympie (permo-Carboniferous) formation, with intrusive masses of granite and diorite, and the auriferous quartz reefs occur in or adjacent to the diorite. The other districts referred to are in the prospecting stages. A report on the west coast of the Cape York Peninsula and on some islands of the Gulf of Carpenteria has been drawn up by Mr. C. F. V. Jackson. Interesting particulars and photographic views are given of

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this little known region, including notes on the mangrove trees and their influence on the coast line. The gold-field of Horn Island is described, the reefs occurring in porphyritic granite. The works are now abandoned, but apparently they were started before adequate investigations had been made, and even now it is doubtful whether the trials were exhaustive.

WE have received a copy of the illustrated catalogue of chemical apparatus and laboratory fittings supplied by Messrs. Max Kaehler and Martini, of Berlin, W. The catalogue runs to 500 pages, and will be sent post free to schools and colleges where there are chemical laboratories. The sole agent for the United Kingdom is Mr. S. Bornett, 62 King William Street, London, E.C.

PROF. WYNDHAM R. DUNSTAN, F.R.S., was recently appointed by the Board of Trade to be director of the Imperial Institute, and one of the results appears to be the publication, as a supplement to the *Board of Trade Journal*, of a "Bulletin of the Imperial Institute." The first issue of the bulletin contains much useful information as to the experiments and inquiries which have been carried out in the scientific and technical department of the Institute. Reports on the following investigations, amongst others, are included:—poisonous fodder plants and food grains; analyses and examinations of coal from Trinidad; kaolin from St. Vincent; tin ore from the Bautshi tin fields, Northern Nigeria; fibres from Sierra Leone and Brazil; and nuts from British Honduras and Portuguese East Africa. The second part of the bulletin consists of general notices prepared by the scientific department on a variety of questions, as different as the chemical analysis of gutta-percha as a guide to its cultivation and valuation, and cotton cultivation in Asia Minor. The work of the scientific and technical department is chiefly initiated by departments of the Governments of India and the Colonies. Arrangements have been also made by the Foreign Office whereby British Consuls may transmit for investigation such natural products of the countries in which they are appointed to reside as are likely to be of use to British manufacturers and merchants. Materials are first chemically investigated in the laboratories of the department, which includes a staff of skilled assistants, and are afterwards submitted to technical trials by experts, and finally are commercially valued. Manufacturers, and dealers in natural products, ought to be keenly alive to the advantages to be derived from work and inquiries of this character.

THE additions to the Zoological Society's Gardens during the past week include an Indian Elephant (*Elephas indicus*, ♀) from India, presented by the Maharaja of Benares; a Mozambique Monkey (*Cercopithecus pygerythrus*) from East Africa, presented by Mr. J. R. E. Stansfeld, D.S.O.; a Crested Porcupine (*Hystrix cristata*), a Black-backed Jackal (*Canis mesomelas*), a Puff Adder (*Bitis arietans*), a Cape Bucephalus (*Dispholidus typus*), a Smooth-bellied Snake (*Homalosoma lutrix*) from South Africa, presented by Mr. Barry McMillan; two Puff Adders (*Bitis arietans*) from South Africa, presented by Mr. A. W. Guthrie; two Black Lemurs (*Lemur macaco*) from Madagascar, a New Zealand Owl (*Ninox novae-seelandiae*), four Variegated Sheldrakes (*Tadorna variegata*) from New Zealand, five Nutmeg Fruit Pigeons (*Myristicivora bicolor*) from Moluccas, six Nicobar Pigeons (*Caloenas nicobarica*) from the Indian Archipelago, a Glossy Calornis (*Calornis chalybeus*), a Hamadryad (*Naia bungurus*) from India, seven Large Andaman Parrakeets (*Palaeornis magnirostris*), an Andaman Starling (*Poliopsar andamanensis*), six Andaman Teal (*Querquedula albigularis*) from the Andaman Islands, two Canadian Cranes (*Grus canadensis*), four Prickly Trionyx (*Trionyx spinifer*) from North America, four Ceylonese Terrapins (*Nicoria trijuga*) from Ceylon, two Adanson's Sternotheres (*Sternothoerus adansoni*) from West Africa, deposited; a Brush Turkey (*Talegalla lathami*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN JULY:—

1. 10h. 40m. Minimum of Algol (β Persei).
5-6. Venus very near Regulus (α Leonis).
9. 8h. 4m. to 9h. 11m. Moon occults ρ′ Sagittarii (mag. 3·9).
,, 15h. Venus at greatest elongation, 45° 30′ E.
15. Venus. Illuminated portion of disc = 0·459 of Mars = ●·873.
20. 13h. 56m. Moon in conjunction with Aldebaran (α Tauri).
21. 12h. 23m. Minimum of Algol (β Persei).
23. Mars 1½° N. of Spica (α Virginis).
24. 9h. 12m. Minimum of Algol (β Persei).
26. 8h. Moon in conjunction with Pallas. Pallas 0° 47′ N.
29. 20h. Saturn in opposition to the sun.
30. Uranus ½° N. of 51 Ophiuchi (mag. 4·9).

NEW COMET, 1903 *c*.—A Kiel Centralstelle telegram announces that M. Borelly, observing at Marseilles, discovered a new comet, 1903 *c*, on June 21. Its position for 11h. 36·5m. (M.T. Marseilles) on June 21 was

R.A. = 21h. 52m. 52s., Dec. = 8° 10′ south,

and its daily movements in R.A. and Declination are −28s. and +44′ respectively.

The telegram states that a nucleus and a tail have been observed, but it does not state the magnitude of the object.

A later telegram states that Herr Wirtz, Strasburg, observed this comet at 22h. 8·8m. (M.T. Strasburg) on June 22, and determined its position as follows:—

R.A. = 21h. 51m. 53·73s.
Dec. = 7° 17′ 11″ south.

PHOTOGRAPHIC OBSERVATIONS OF COMET 1902 III.—Prof. Sykora, of Jurjew, has communicated to No. 3871 of the *Astronomische Nachrichten* the results of the photographic observations of Comet 1902 iii. made by him during September and October of last year.

Reproductions of drawings made from the photographs show that on September 26 the comet possessed two tails of Bredichin's second and third types respectively, and the measurements showed that the longer tail was about 2° in length. On October 7 this length was increased to 3°, and the tail was more like Bredichin's first type, whilst the shorter third-type tail had decreased in length. On the photograph taken on October 9 this difference was further accentuated.

THE MIRROR OF THE CROSSLEY REFLECTOR.—Dr. G. Johnstone Stoney writes to correct a misapprehension referring to the mirror of the Crossley reflector in use at the Lick Observatory. The figuring of this mirror is usually attributed to the late Dr. Common, and has been ascribed to him in these columns (pp. 132, 162). It appears, however, from a correspondence between Mr. J. Gledhill and Prof. Campbell that Mr. Crossley's gift to the Lick Observatory included two mirrors, described as A and B, essentially of the same diameter and focal length. One of these, B, was refigured by Sir Howard Grubb, and was sent to America as it came from his workshop. "It is the B mirror," Prof. Campbell states, "which has been used in all the work with the Crossley Reflector at the Lick Observatory." Dr. Stoney adds:—"In any enumeration of noteworthy instruments made by Dr. Common, it would appear desirable to include the very remarkable flat mirrors of large size which he produced of late years, some of them for the cœlostats of the Joint Solar Eclipse Committee of the Royal and Royal Astronomical Societies. The production of

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